HL 104

Temperature measurement training panel

Learning objectives/experiments

- function, type of construction and applications of bimetallic dial thermometers
- function, type of construction and applications of liquid expansion thermometers, resistance thermometers and thermocouples
- measuring precision, sensitivity and measuring errors of the different thermometers
- installation methods, installation errors and response

Description

- **investigating different methods of temperature measurement**
- **four different measuring sections**
- **measuring sections can be selected by ball valves**
- **water connections made using quick-release couplings**

Four measuring sections with different thermometers can be individually selected using ball valves. The temperatures measured using the resistance thermometer and the thermocouple are displayed digitally. The bimetallic dial and liquid-in-glass thermometers are direct indicating instruments.

The response of the measuring devices for different flows can be investigated. The flow rate is measured with a rotameter.

The effect of different installation positions and methods on measurement accuracy can be investigated.

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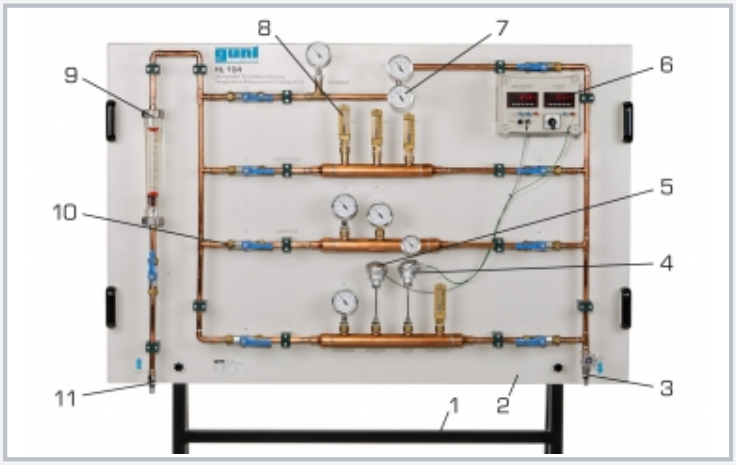

1 frame, 2 panel, 3 drain tap, 4 thermocouple type K, 5 resistance thermometer type Pt100, 6 digital displays for Pt100 and thermocouple type K, 7 bimetallic dial thermometer, 8 liquid expansion thermometer, 9 rotameter, 10 ball valve, 11 water connection

Specification

[1] investigation of 4 different temperature measuring techniques in the range from 0...60°C: resistance thermometer Pt100, thermocouple type K, bimetallic dial thermometer and liquid expansion thermometer
[2] 4 different measuring sections, can be selected individually with ball valves
[3] digital display of the temperatures measured using sensors
[4] flow rate measurement with rotameter
[5] water connections made using quick-release couplings

Technical data

Measuring ranges
- flow rate: 150...1600L/h
- temperature:
  - 0...60°C (bimetallic dial thermometer)
  - 0...60°C (liquid expansion thermometer)
  - -50...400°C (Pt100)
  - 0...1200°C (thermocouple type K)

230V, 50Hz, 1 phase
230V, 60Hz, 1 phase
120V, 60Hz, 1 phase
UL/CSA optional
LxWxH: 1650x700x1850mm
Weight: approx. 100kg

Required for operation

water connection, hot water supply: 1500L/h, drain

Scope of delivery

1 trainer
1 set of hoses
1 manual